

Abstract of the Disclosure

Enhanced surface area spinal fusion devices have upper and lower sections which are implanted directly within the bodies of the vertebra being fused, thereby surrounding the implanted sections with cancellous bone which is more conducive to ingrowth and permanent fusion. A preferred device comprises a frame-like structure composed of biocompatible material such as carbon fiber, the structure having a substantially hollow interior and open side walls or apertures to receive bone-graft material. The device is preferably used in conjunction with adjoining intervertebral cages, which may be rigidly joined to one another and/or to the inventive device. One or more physical features are also preferably provided to engage with surrounding bone or minimize back-out, such features including teeth, ridges, grooves, or outriggers. One or more shape-memory elements may also be used, each of which is preferably compressed for insertion then expanded when the device is in place. The inventive fixation device need not be employed between adjacent vertebra, but may be used between vertebra separated by one or more intermediate vertebra, in which case the device extends through the intermediate vertebra, preferably in intimate contact therewith. Multiple devices may also be implanted side by side between the same set of adjacent vertebra. In addition to these various alternative embodiments of the invention, a preferred method of installation is also disclosed. In one of the methods, one or more fasteners, installed with an alignment guide, provide additional fixation.